100

110

```
|F   F   F   F  (F   .   .   .   .   .   .|   3.3
|F   F   F   F   F   .   .   .   .   .   .|   3.3165
|F   F   F   F   F   .   .   .   .   .   .|   3.333
|F   F   F   F   F   F   .   .   .   .   .|   3.3495
|F   F   F   F   F   F   F   .   .   .   .|   3.366
|F   F   F   F   F   F   F   .   .   .   .|   3.3825
|F   F   F   F   F   F   F   F   .   .   .|   3.399
|F   F   F   F   F   F   F   F   .   .   .|   3.4155
|F   F   F   F   F   F   F   F   F   .   .|   3.432
|F   F   F   F   F   F   F   F   F   F   .|   3.4485
|F   F   F   F   F   F   F   F   F   F   .|   3.465
```

FIRST
OPERATING
PARAMETER

```
 1   1   1   1   1   1   1   1   1   1   1

 7   7   7   7   7   7   7   7   7   7   8
 1   1   2   3   4   5   6   7   8   9
     9   8   7   6   5   4   3   2   1
```
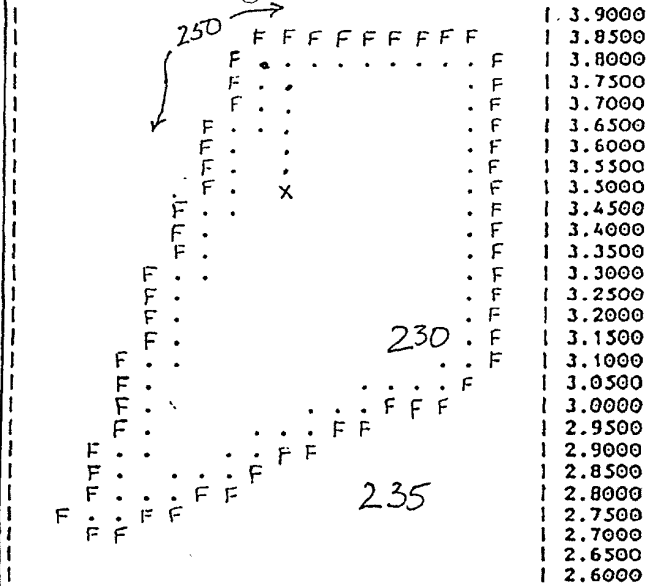
SECOND
OPERATING
PARAMETER

Fig. 1
Prior Art

```
StartPoint=( 1.95000, 3.50000))
HorizontalStepSize= 0.05000        VerticalStepSize- 0.05000
HorizontalRange    1.00000 -  2.60000  VerticalRange    2.00000 - 4.60000

                                            |  3.9000
            250   F  F  F  F  F  F  F  F  F  |  3.8500
                    F  .  .  .  .  .  .  . F |  3.8000
                    F  .  .                . F | 3.7500
                    F  .  .                . F | 3.7000
                 F  .  .                   . F | 3.6500
                 F  .  .                   . F | 3.6000
                 F F .                     . F | 3.5500
                 F .   .    X              . F | 3.5000
               F .  .                      . F | 3.4500
               F F .                       . F | 3.4000
               F F .                       . F | 3.3500
             F . .                         . F | 3.3000
             F F .                         . F | 3.2500
             F F F .                       . F | 3.2000
             F .  .               230    . F | 3.1500
           F  .  .                        . F | 3.1000
           F F .  .              .  .    . F | 3.0500
           F F .  `            .  .   F F F | 3.0000
           F .  .            .   . F F      | 2.9500
         F .  .         .   .  F F          | 2.9000
         F .           .  .  F F            | 2.8500
         F F .     . F F            235     | 2.8000
       F . . F F                            | 2.7500
         F F                                | 2.7000
                                            | 2.6500
                                            | 2.6000

     1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2
     . . . . . . . . . . . . . . . . .
     5 5 6 6 7 7 8 8 9 9 0 0 1 1 2 2 3 3 4
     0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0
     0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```
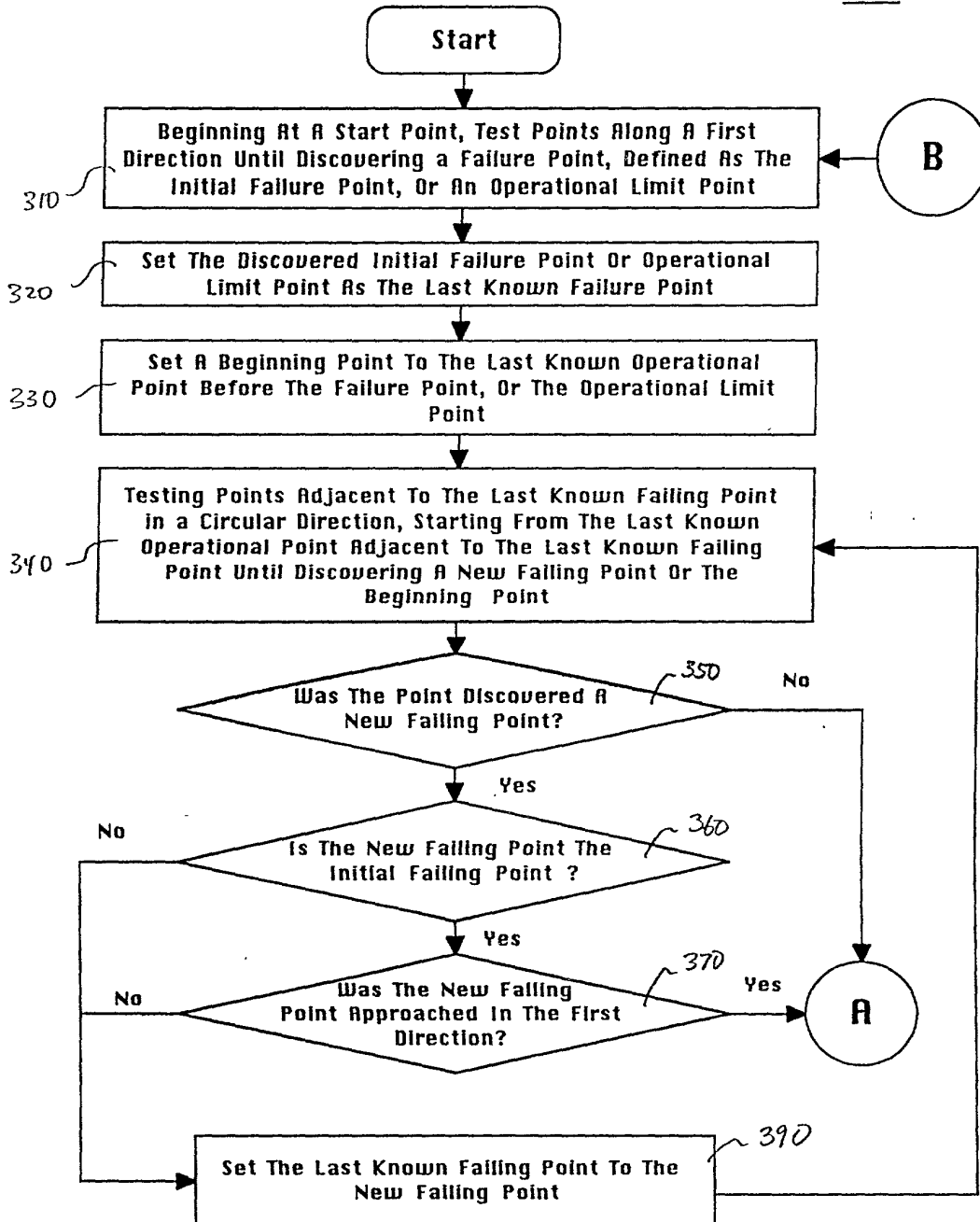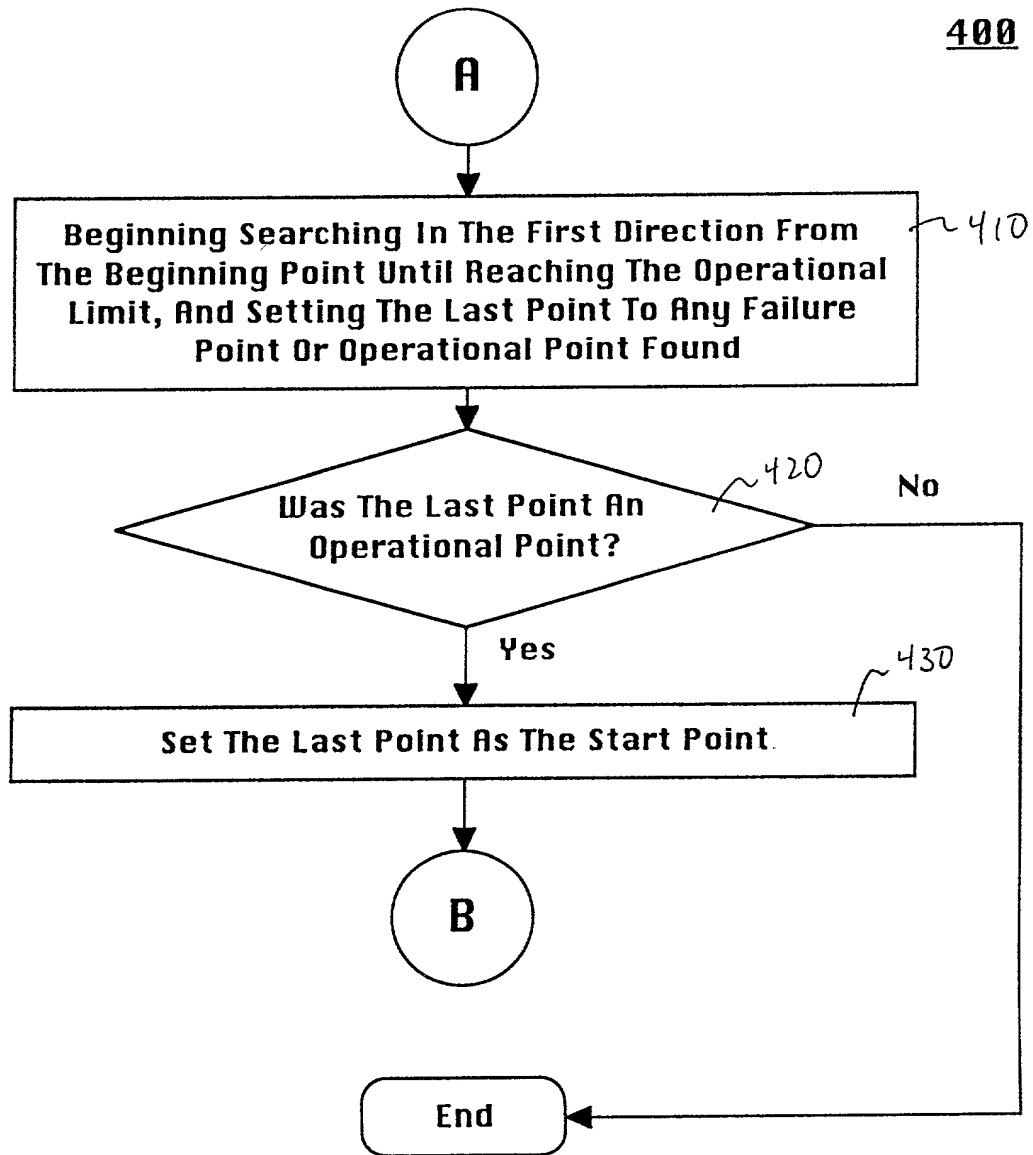
First Operating Parameter 210

Points Tested - 130

Second Operating Parameter 220

Fig. 2

```
                    ┌─────────────┐
                    │    Start    │
                    └──────┬──────┘
                           │
                           ▼
     ┌──────────────────────────────────────────┐          ┌───┐
     │  Beginning At A Start Point, Test Points   │◄─────────│ B │
     │  Along A First Direction Until Discovering │          └───┘
 310 │  a Failure Point, Defined As The Initial   │
     │  Failure Point, Or An Operational Limit    │
     │  Point                                     │
     └──────────────────┬───────────────────────┘
                        │
                        ▼
     ┌──────────────────────────────────────────┐
     │  Set The Discovered Initial Failure Point │
 320 │  Or Operational Limit Point As The Last   │
     │  Known Failure Point                       │
     └──────────────────┬───────────────────────┘
                        │
                        ▼
     ┌──────────────────────────────────────────┐
     │  Set A Beginning Point To The Last Known  │
 330 │  Operational Point Before The Failure      │
     │  Point, Or The Operational Limit Point     │
     └──────────────────┬───────────────────────┘
                        │
                        ▼
     ┌──────────────────────────────────────────┐
     │  Testing Points Adjacent To The Last Known│
     │  Failing Point in a Circular Direction,    │
 340 │  Starting From The Last Known Operational  │
     │  Point Adjacent To The Last Known Failing  │
     │  Point Until Discovering A New Failing     │
     │  Point Or The Beginning Point              │
     └──────────────────┬───────────────────────┘
                        │
                        ▼
                  ╱─────────────╲              No
           350  ╱ Was The Point   ╲────────────────┐
              ╱  Discovered A New   ╲               │
              ╲  Failing Point?     ╱               │
               ╲─────────────────╱                 │
                        │ Yes                       │
                        ▼                           │
      No          ╱─────────────╲                   │
   ┌──────────── ╱ Is The New     ╲  360            │
   │            ╱  Failing Point The ╲               │
   │            ╲  Initial Failing   ╱               │
   │             ╲ Point?           ╱                │
   │              ╲───────────────╱                 │
   │                     │ Yes                       │
   │                     ▼                           │
   │    No         ╱─────────────╲   370       Yes   │
   │ ┌──────────  ╱ Was The New   ╲──────────┐      │
   │ │           ╱  Failing Point    ╲         │      │
   │ │           ╲  Approached In The ╱        ▼      ▼
   │ │            ╲ First Direction? ╱       ┌───┐
   │ │             ╲──────────────╱          │ A │
   │ │                                        └───┘
   │ ▼                                           
   │ ┌──────────────────────────────────────┐   390
   └►│  Set The Last Known Failing Point To  │◄────────┐
     │  The New Failing Point                │         │
     └──────────────────────────────────────┘─────────┘
```

Fig. 3

A

Beginning Searching In The First Direction From
The Beginning Point Until Reaching The Operational
Limit, And Setting The Last Point To Any Failure
Point Or Operational Point Found   ~410

Was The Last Point An
Operational Point?   ~420   No

Yes

Set The Last Point As The Start Point   ~430

B

End

Fig. 4